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Applicant : Raymond Kurzweil
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REPLY BRIEF

Pursuant to 37 C.F.R. § 41.41, Applicant responds to the Examiner's Answer as follows:

I. Rejections of claims 1-10, 13-21, and 24-26

Claims 1 and 15

Claims 1 calls for the features of...an adapter to send a morphed, first video image signal to a communications network and sounds in connection with a theme of the morphed, first video image signal and to receive a second, video image signal from the communications network, the second video image signal of a second, different physical location. Claim 15 calls for similar features.

The alleged combination of references do not teach
all of the claimed features

In answering Appellant's arguments over Abbasi in view of Yee, and in further view of Biocca and Saylor for claim 1, the examiner in "Response to Argument" stated: "**Applicant appears to argue as if only Saylor was used to reject the claimed limitation; this is an incorrect reading of the rejection. Saylor is applied to teach the claimed feature of sending sounds in connection with a theme of a first video image signal.**" Appellant had argued that the combination of references did not teach the claimed feature and that Saylor in particular did not teach what the examiner stated was taught: "**sending sounds in connection with a theme of a first video image signal.**" Further Appellant also argued

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that the examiner misconstrued the features of Claim 1 by regarding Saylor as suggesting: **“sending sounds in connection with the simulation being displayed and felt (visual and tactile signals) by modifying the real-time voice communications and adding background noises to simulation to improve the simulation experience.”** This statement by the examiner is merely the examiner's own characterization of Saylor's teachings, which neither fairly reflects those teachings nor addresses the features of Appellant's Claim 1.

Appellant maintains the position that Abbasi, Yee, Biocca and Saylor neither describe nor render obvious inter alia “an adapter to send the morphed, first video image signal to a communications network and sounds in connection with a theme of the morphed, first video image signal and to receive a second, video image signal from the communications network, the second video image signal of a second, different physical location,” as required by claim 1.

In the Appeal Brief, Appellant argued that the examiner failed to consider whether the cited references disclosed or rendered obvious this particular claim element. Rather, Appellant contended that the examiner sought to read the claim as claiming a different claim element.¹ All words in a claim must be considered in judging the patentability of that claim against the prior art.² The examiner addressed Appellant's contention by stating that Biocca teaches that the first video image signal is morphed and Saylor suggests sending sounds in connection with a simulation being displayed and felt. Appellant contends that this reasoning neither addresses the argument presented in the Appeal Brief nor the subject matter being claimed. On the contrary, the examiner again seeks to read the claim as claiming a different claim element (**“sounds in connection with a simulation being displayed and felt.”**)

Appellant also contends that the examiner's inaccurately characterizes Saylor in stating that **“Saylor suggests to one of ordinary skill that sending sounds in connection with the video image being displayed to the user provides a more realistic interaction, particularly more realistic audio stimuli, for the user.”** In particular, the examiner misconstrues Saylor as imparting any connection between **“more realistic audio stimuli”** and **“a video image being displayed.”**

¹ See Appellant's brief p. 9 and discussion pertaining to the examiner's assertion that Saylor suggests “wherein the sounds are in connection with a theme of a virtual reality simulation system being displayed to a user.”

² MPEP § 2143.03 (citing *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970)).

Saylor describes simulating voices that are received by a pilot over a UHF radio channel, i.e., an audio-only medium for communication with a remote, unseen entity:

An example of aural realism provided by the invention is the replication of the sound of a UHF channel used in a flight simulation system. In this example, system 100 is used to accurately simulate voices that are received by a pilot over a UHF radio channel.³

Further, Saylor describes modeling characteristics of real world radio communications channels – for example, as described above, a UHF radio channel:

In general, the transceiver and impairment models of engine 21 are created by analyzing a real world communications system and its effects on transmitted signals. Their processing is used to model characteristics of real world radio communications channels. The processing is then used to impose those characteristics on a signal, so that the signal simulates a signal that was transmitted through those channels. Thus, the model is used to replicate the sound at the output end of a radio communications channel. Transceiver models model the type of radio or other transceiver.⁴

Appellant contends that Saylor merely modifies the audio reproduction of transmitted sounds representing remote communications, e.g. voices heard over the radio, but neither describes nor renders obvious sounds “in connection with the video image being displayed” as asserted by the examiner.

The examiner in “Response to Argument” states:

In response to Applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Here the level of ordinary skill in the relevant art at the time of the invention was high. The determination of the level of ordinary skill is determined in consideration of the types of problems encountered in the virtual reality and telepresence arts, including problems of improving realism, improving functionality, improved interaction with others, overcoming telecommunication delays, etc., the sophistication of the technology used, such as robotics (shown in Abbasi and Yee), telecommunications, computer imaging,

³ Saylor, col. 1 lines 53 – 57

⁴ *Id.*, col. 3 lines 38 – 47

etc., rapidity in which innovations are made, and education level of active workers in the field. Each of the applied references teaches techniques that were known in the prior art. The Court noted in *KSR v. Teleflex Inc.*, 550 U.S. 398, 402 "if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond that person's skill." Here the techniques used to improve the realism in augmented-reality and simulation systems would have been recognized by one of ordinary skill in the art to improve a telecommunication system of Abbasi. Applicant has provided no persuasive evidence that the combination of the conventional and known elements is uniquely challenging or difficult for one of ordinary skill in the art.⁵

The examiner's obviousness rejection is an exercise in improper *ex post* reasoning

Appellant maintains the position that the examiner's alleged obviousness rejection is an exercise in improper *ex post* reasoning in which claim 1 is used as a roadmap to find different elements among a collection of references chosen by the examiner and when those elements were not found in the references to misconstrue the reference and/or claim element. As argued in the Appeal Brief, the examiner is required to examine the claimed invention as a whole. The Examiner's Answer acknowledging that hindsight is implicit in any claim determination regarding obviousness ("any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning") nevertheless fails to address Appellant's argument that the examiner has not considered the invention as a whole.

Moreover, the examiner's finding that: "[h]ere the level of ordinary skill in the relevant art at the time of the invention was high." does not in Appellant's opinion make proper either the examiner's application of *ex post* reasoning or to absolve the examiner of the requirement to determine whether the claimed invention as a whole, as opposed to claim elements pieced together from a collection of references using Appellant's teachings as a roadmap, would have been obvious to a person of ordinary skill in the art.

Claims 2 and 16

⁵ Examiner's Answer, page 25-26.

Claim 2 depends from claim 1 and calls for the features of the processor overlaying a virtual environment over one or more portions of the video image to form a virtual scene. Claim 16 calls for similar features.

In answering Appellant's arguments, the examiner states:

Applicant contends the applied references do not describe or teach the claim limitation that "the processor overlays a virtual environment over one or more portions of the video image to form a virtual scene." (Brief, page 12.) Applicant does not argue a particular interpretation of the claimed limitation, merely that the references do not disclose them. The Examiner respectfully disagrees. Biocca teaches specifically "an augmented reality [virtual] display ... [that] has the capability to display virtual objects and environments, superimpose virtual objects on the 'real world' scenes" ([0009]). Under the broadest reasonable interpretation of "a virtual environment" the described step of superimposing virtual objects on the user's real world view (figures 12B-D) creates an augmented reality, or virtual, scene.⁶

In response, Appellant stands by the argument presented on pages 12-13 of the Appeal Brief, and further contends that the new explanation of the rejection presented in the Examiner's Answer also fails to take into account all elements recited in the claims, e.g., "the processor overlays a virtual environment over one or more portions of the video image to form a virtual scene."

In this new explanation, the examiner refers to "a virtual scene" but cites Biocca, paragraph [0009], reproduced below:

Consequently, there is a need for an augmented reality display that mitigates the above mentioned disadvantages and has the capability to display virtual objects and environments, superimpose virtual objects on the "real world" scenes, provide "face-to-face" recording and display, be used in various ambient lighting environments, and correct for optical distortion, while minimizing computational power and time.

Biocca describes superimposing virtual objects on "real world" scenes, not virtual scenes. Appellant contends that a real-world scene is not equivalent to a virtual scene, recited in claims 2 and 16. A virtual scene represents something other than the real-world environment of

⁶ Examiner's Answer, page 27-28.

the user as taught by Biocca. Therefore, within the context of claims 2 and 16 the provision of a virtual scene involves different computational processing and provides a significantly different claimed invention than that achieved by the alleged combination of references.

Claims 3 and 17

Claim 3 depends from claim 2 and calls for the mannequin to be a humanoid robot having tactile sensors positioned along the exterior of the robot, the sensors sending first tactile signals to the communications network...and for a body suit having tactile actuators, the tactile actuators receiving second tactile signals from the communications network. Claim 17 calls for similar features.

In answering Appellant's arguments, the examiner states:

Applicant contends the applied references do not describe or teach a body suit or the use of a body suit with tactile actuators receiving tactile signals from the communications network. (Brief page 14). The Examiner respectfully disagrees. Based on the broadest reasonable interpretation of the term "body suit" Abbasi reads on the claim language by describing a hand interface 90 that acts as a "complimentary surrogate apparatus" comprises "tactile actuators...tactile actuators apply surface pressure to the fingers in the glove" (column 5, lines 27-39). Abbasi shows in Figure 5 the actuator signals are sent from communications connections from a first location 160 to a second location 165 "Response Actuator Process" 145, to the surrogate 165.⁷

In response, Appellant stands by the argument presented on pages 13-15 of the Appeal Brief, stating that Abbasi only describes actuators used with a portion of the body, and Abbasi does not describe a body suit or the use of a body suit with tactile actuators receiving tactile signals from the communications network. Further, Appellant contends that the examiner's interpretation of a "body suit" as equivalent to Abbasi's "complimentary surrogate apparatus" is unreasonable in view of the meaning of the words "body" and "suit" in their ordinary usage as

⁷ Examiner's Answer, page 28.

they would be understood by one of ordinary skill in the art and the teachings of Appellant's specification.

Claims 4 and 18

Claim 4 depends from claim 3 and calls for motion sensors positioned throughout the body suit, the motion sensors sending first motion signals corresponding to movements of each sensor relative to a reference point, the first motion signals transmitted to the communications network... the humanoid robot to be a first humanoid robot...and a second humanoid robot at the second location, the second humanoid robot receiving, from the communications network, the first motion signals from the motion sensors, the first motion signals from the motion sensors causing a movement of the second humanoid robot that is correlated to a movement of the body suit. Claim 18 calls for similar features.

In answering Appellant's arguments, the examiner states:

Applicant contends the applied references does not describe or teach motion sensors positioned throughout a body suit, the motion sensors sending first motion signals corresponding to movements of each sensor relative to a reference point. Particularly Applicant argues the reference Abbasi merely describes a glove (Brief page 16). The Examiner respectfully disagrees. Based on the broadest reasonable interpretation of the term "body suit", the hand interface 90, which covers a portion of the user's body with a suit/fabric, the applied references read on the claim language. Abbasi describes the hand interface wherein "[e]ach sleeve further comprises a plurality of displacement sensors 105. The displacement sensors detect movement of the user's fingers in the glove." (Column 5, lines 60-36.)⁸

In response, Appellant refers to the response presented with respect to claims 3 and 17 regarding the meaning of the term "body suit" and the examiner's unreasonable interpretation thereof.

Claim 26

Claim 26 depends from claim 1 and calls the goggles to receive a morphed second video image from the processor.

⁸ Examiner's Answer, page 29.

In answering Appellant's arguments, the examiner states:

Applicant contends the grounds of rejection do not address the claimed limitation of Claim 26. The Examiner respectfully disagrees. Claim 26 has been rejected under Abhasi in view of Yee, Biocca and Saylor, with Biocca particularly teaching receiving a morphed second video image from a processor ([0038], during the communication images are morphed with each subsequent received video image signal). Biocca suggests morphing the image and overlaying the image allows the image to be perceived in a user preferred 3D or stereoscopic view that gives a more realistic view of the second location and presenting various 3D structures in a personal and correct perspective viewpoint ([0038]-[0039]). Further it would have been very obvious to one of ordinary skill in the communication arts to duplicate the morphing process for a second image following a first image or an image discontinuous to the first (Biocca example of viewing a person's body discontinuously), this would have provided the predictable result of the stereoscopic or overlaid view, as suggested by Biocca, but merely as separate image signals.⁹

In response, Appellant notes that this explanation is new and, as noted on page 16 of the Appeal Brief, was not presented in the Final Office Action, nor was any other explanation of the rejection of claim 26. Further, Appellant contends that the new explanation of the rejection presented in the Examiner's Answer fails to take into account all elements recited in the claims, i.e. "goggles [that] receive a morphed second video image from the processor."¹⁰

The examiner cites Biocca, paragraphs [0038] and [0039], which are reproduced below:

Morphing distorts the stereo images to produce a viewpoint of preferably a user's moving face that appears different from the viewpoint originally obtained by facial capture system 203. The distorted viewpoint is accomplished via image morphing to approximate a direct face-to-face view of the remote face. Face-warping and image stitching module 207 morphs images to the user's viewpoint. The pixel correspondence algorithm or face warping and image stitching module 207 calculates the corresponding points between the first images to create second images for remote users. Image data retrieved from the first images allows for a calculation of a 3D structure of the head of the user. The 3D image is preferably a stereoscopic video image or a video texture mapper to a 3D virtual mesh. The 3D model

⁹ *Id.*, page 29-30.

¹⁰ Without imputing Appellant's Specification into the claim, but in order to assist the Board in construing the claimed feature, the Specification at. pg. 4, lines 18-21 describes goggles that receive a video image from the processor: "Each set of goggles 20a and 20b includes a receiver (e.g., receiver 70a and receiver 70b) containing a battery source (not shown). Receivers 70a-70b receive the audio and video signals transmitted from processors 16a-16b."

can display the 3D structure or second images to the users in the remote location. Each user in the local and remote sites has a personal and correct perspective viewpoint on the augmented reality scene. Optical tracking system 106 and microphone 204 provide signals to networked computer 107 that are processed by a virtual environment module 208.

A display array 222 is provided to allow the user to experience the 3D virtual environment, for example via a projective augmented-reality display 401 and stereo audio earphones 205 which are connected to user 110. Display array 222 is connected to a networked computer. In the preferred embodiment, a modem 209 connects a networked computer to network 99.

Thus, while Biocca describes morphing a stereo image for use by a remote user and even if the examiner's unsupported statement that "it would have been very obvious to one of ordinary skill in the communication arts to duplicate the morphing process for a second image following a first image or an image discontinuous to the first" were true, which Appellant does not concede, the examiner has not said anything about the goggles, the processor, or the relationship between them with regard to the cited portions of Biocca.

This Reply Brief is accompanied by a Request for Oral Argument.

For these reasons, and the reasons stated in the Appeal Brief, Applicant submits that the final rejection should be reversed.

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Respectfully submitted,

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